



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/551,373

07/27/2006

Takuo Mitani

050643

3094

23850 7590 09/15/2009  
KRATZ, QUINTOS & HANSON, LLP  
1420 K Street, N.W.  
Suite 400  
WASHINGTON, DC 20005

EXAMINER

KWON, ASHLEY M

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

09/15/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/551,373	<b>Applicant(s)</b> MITANI ET AL.	
	<b>Examiner</b> ASHLEY KWON	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 10-12 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 10-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Response to Amendment*

In response to the amendment received June 16, 2009:

- a. Claims 1-7 and 10-12 are pending;
- b. Claims 8 and 9 were canceled, therefore the objections have been withdrawn;
- c. Claim 12 was added;
- d. The objection to the drawings has been removed in light of applicant's amendments;
- e. The prior art rejections for claims 1-7 and 10-11 are maintained and new prior art rejections applied to newly added claim 12.

### *Claims Analysis*

It is noted that a separator **for use in storage battery** is regarded as intended use. The Courts have held that if the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967); and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). The Courts have held that it is well settled that the recitation of a new intended use, for an old product, does not make a claim to that old product patentable. See *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) (see MPEP § 2114). As such, the limitation requiring the separator *for use in storage battery* is not given patentable weight in claims 1-7 and 10-12.

Art Unit: 1795

It is further noted that claims 1 and 12 are a product-by-process claim. A process limitation in a product claim is given little weight. The cited prior art teaches all of the positively recited structure of the claimed apparatus or product. The determination of patentability is based upon the apparatus structure itself. The patentability of a product or apparatus does not depend on its method of production or formation. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. See *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (see MPEP § 2113). Therefore the process of a paper sheet "formed by wet process" is given no patentable weight as long as the prior art meets the final product that is claimed.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 12 applicant claims a range for the density of the separator from 0.135 to 0.140 g/cm<sup>3</sup>. However, this range lacks support in the specification, as only the end points (0.135 and 0.140 g/cm<sup>3</sup>) are disclosed in table 1. No where else in the specification is the density specified. Therefore, the scope of the claim may only include a density of 0.135 and 0.140 g/cm<sup>3</sup>, and no other densities therebetween.

Art Unit: 1795

***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

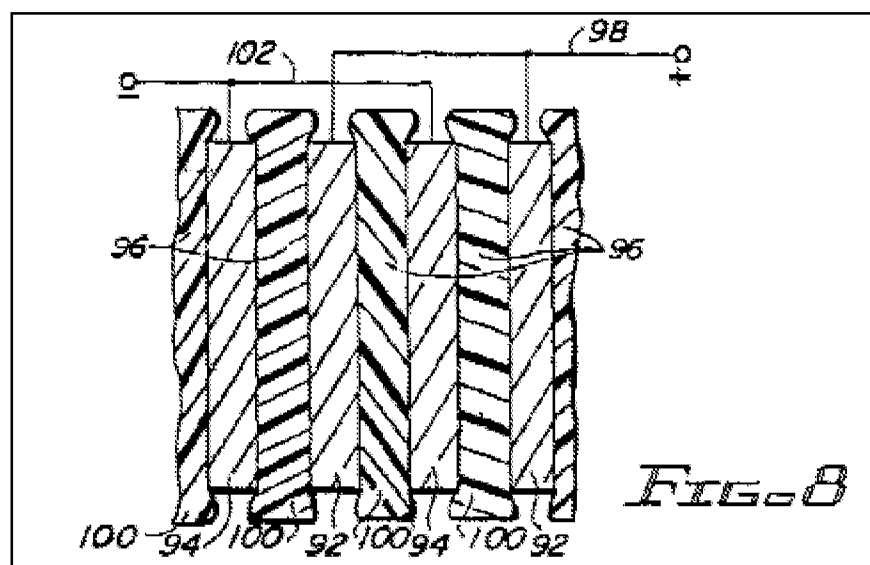
The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-7 and 11 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Forte et al. (US Pat. No. 6,071,651) (hereinafter "Forte").

Art Unit: 1795

Regarding claim 1, Forte teaches a separator (96, see fig. 8) comprising a paper sheet (resilient fibrous mat, 20) mainly composed of glass fibers (see col. 7, lines 42-43) in which the fiber distribution is uniform in the longitudinal and the cross directions of the separator, and the fiber orientation is at random in the longitudinal and the cross directions of the separator (see col. 13, lines 25-28). The resilient fibrous mat (20, see fig. 3) taught by Forte is uniform in density throughout its thickness and the fiber entanglement within the resilient fibrous mat is uniform throughout its thickness (see col. 6, lines 55-59). A separator with randomly oriented fibers (fiber entanglement) and uniform density would have a fiber distribution that is uniform and a fiber orientation that is random in the longitudinal and the cross directions of the separator.



Regarding claims 2, Forte does not explicitly teach a separator for use in storage battery according to claim 1, wherein the average value for a difference of a wicking velocity (time required for absorbing up to 5 cm height) between the longitudinal and the cross directions of the separator for use in storage battery is 11% or less.

However, it is reasonable to presume that an average value for a difference of a wicking velocity between the longitudinal and the cross directions of the separator for use in storage battery being 11% or less is inherent to the separator taught by Forte. Support for said presumption is found in the use of like materials (i.e. glass fibers with uniform fiber distribution and random orientation in the longitudinal and cross directions) which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties would obviously have been present once the Forte product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

Regarding claim 3, Forte does not explicitly teach a separator for use in storage battery according to claim 2, wherein the average value for a difference of a wicking velocity (time required for absorbing up to 5 cm height) between the longitudinal and the cross directions of the separator for use in storage battery is 7% or less.

However, it is reasonable to presume that an average value for a difference of a wicking velocity between the longitudinal and the cross directions of the separator for use in storage battery being 7% or less is inherent to the separator taught by Forte. Support for said presumption is found in the use of like materials (i.e. glass fibers with uniform fiber distribution and random orientation in the longitudinal and cross directions)

Art Unit: 1795

which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties would obviously have been present once the Forte product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

Regarding claim 4, Forte teaches a separator (96, see fig. 8) according to claim 1, wherein the fiber distribution is uniform in the direction of the thickness of the separator, and the randomness of the fiber orientation in the longitudinal and the cross directions of the separator is uniform in the direction of the thickness of the separator. The resilient fibrous mat (20, see fig. 3) taught by Forte is uniform in density throughout its thickness and the fiber entanglement within the resilient fibrous mat is uniform throughout its thickness (see col. 6, lines 55-59). A separator with randomly oriented fibers (fiber entanglement) and uniform density would have a fiber distribution that is uniform in the thickness direction, and have a random fiber orientation in the longitudinal and the cross directions of the separator that is uniform in the thickness direction.

Regarding claim 5, Forte does not explicitly teach a separator for use in a storage battery according to claim 4, wherein the average value for a difference of a wicking velocity (time required for absorbing up to 5 cm height) between the right-side and the back-side surfaces of the separator for use in storage battery is 17% or less.

However, it is reasonable to presume that an average value for a difference of a wicking velocity between the longitudinal and the cross directions of the separator for use in storage battery being 17% or less is inherent to the separator taught by Forte. Support for said presumption is found in the use of like materials (i.e. glass fibers with

Art Unit: 1795

uniform fiber distribution in the thickness direction and random fiber orientation in the longitudinal and cross directions that is uniform in the thickness direction) which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties would obviously have been present once the Forte product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

Regarding claim 6, Forte does not explicitly teach a separator for use in a storage battery according to claim 5, wherein the average value for a difference of a wicking velocity (time required for absorbing up to 5 cm height) between the right-side and the back-side surfaces of the separator for use in storage battery is 10% or less.

However, it is reasonable to presume that an average value for a difference of a wicking velocity between the longitudinal and the cross directions of the separator for use in storage battery being 10% or less is inherent to the separator taught by Forte. Support for said presumption is found in the use of like materials (i.e. glass fibers with uniform fiber distribution in the thickness direction and random fiber orientation in the longitudinal and cross directions that is uniform in the thickness direction) which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties would obviously have been present once the Forte product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

Regarding claim 7, Forte teaches a separator for use in storage battery according to claim 1, wherein there is no difference in the surface roughness between

Art Unit: 1795

the right-side and the backside surfaces of the separator for use in storage battery and both of them are smooth. The texture of the major surfaces of the resilient fibrous mat separators, especially those subjected to hydroentanglement, are relatively smooth (see col. 14, lines 38-41). Since the smooth surfaces facilitate the movement of electrode plates over the major surfaces of the separators, it is assumed that both sides of the resilient fibrous mat (right-side and backside surfaces) have the same, or nearly the same roughness. If the resilient fibrous mats had a different roughness on its right-side and backside surfaces, then one side would better facilitate the movement of electrode plates than the other side.

Regarding claim 11, Forte teaches a storage battery characterized by using a separator for use in storage battery according to claim 1. A storage battery is anticipated by a lead-acid battery, which is taught by Forte (see col. 2 line 66 - col. 3 line 3).

### ***Claim Rejections - 35 USC § 103***

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forte.

Regarding claim 12, Forte teaches a separator for use in storage battery comprising a paper sheet formed by wet process and mainly composed of glass fibers in which the fiber distribution is uniform in the longitudinal and the cross directions of the separator, and the fiber orientation is at random in the longitudinal and the cross directions of the separator (see explanation above for claim 1), and the density of the separator is 0.135 or 0.140 g/cm<sup>3</sup>. As explained above, the specification does not

Art Unit: 1795

support a density range from 0.135 to 0.140 g/cm<sup>3</sup>. Forte discloses in a preferred embodiment, the fibrous mats range in weight from about 75 to 150 g/m<sup>2</sup> (see col. 7, lines 63-66) and a thickness from about 0.01 to about 0.5 inches (see col. 8, lines 3-4). Using the information provided by Forte, one is able to obtain the densities claimed by applicant. With a weight of 75 g/m<sup>2</sup> and a thickness of 0.0219 in and 0.0211 in one obtains the densities 0.135 and 0.140 g/cm<sup>3</sup> respectively. See below for in depth calculations.

$$\begin{array}{l}
 0.0219 \text{ in} = 5.56 \times 10^{-4} \text{ m} \\
 0.0211 \text{ in} = 5.36 \times 10^{-4} \text{ m} \\
 \\
 \frac{75 \text{ g} / \text{m}^2}{5.56 \times 10^{-4} \text{ m}} = 1.35 \times 10^5 \text{ g} / \text{m}^3 = 0.135 \text{ g} / \text{cm}^3 \\
 \frac{75 \text{ g} / \text{m}^2}{5.36 \times 10^{-4} \text{ m}} = 1.40 \times 10^5 \text{ g} / \text{m}^3 = 0.140 \text{ g} / \text{cm}^3
 \end{array}$$

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forte as applied to claims 1-9 and 11 above, and further in view of Zguris (US Pat No. 6,306,539).

Regarding claim 10, Forte fails to teach a separator for use in storage battery according to claim 1, wherein it is used for a valve regulated lead-acid battery.

However, Zguris teaches a binderless glass fiber mat suitable for use as a separator for valve regulated lead acid batteries (see col. 5, lines 51-54). The combination of familiar elements is likely to be obvious when it does no more than yield predictable results. See *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, \_\_\_, 82

Art Unit: 1795

USPQ2d 1385, 1395 – 97 (2007) (see MPEP § 2143, A.). It would have been obvious to a person of ordinary skill in the art to combine the separator taught by Forte with the valve regulated lead-acid battery taught by Zguris in order to provide the valve regulated lead-acid battery with a low cost, resilient, separator (*Forte*: see col. 2, lines 66-67).

### ***Response to Arguments***

Applicant's arguments filed 6/16/09 have been fully considered but they are not persuasive.

Applicant argues that:

*“Forte et al, only teaches that the fiber distribution is uniform throughout its thickness. Furthermore, Forte et al, does not teach that the fiber orientation is at random in the longitudinal direction”*

However, this examiner believes that Forte provides enough information for one of ordinary skill in the art to determine that the fiber distribution and is uniform and fiber orientation random in the longitudinal and cross directions of the separator. It would have been obvious to one of ordinary skill in the art that if the mat is uniform in density and fiber entanglement throughout its thickness, that it would also be uniform in the longitudinal and cross directions as well. Barring further specification on exactly which directions applicant deems as the longitudinal and cross directions, this the limitation of this claim is met in light of the fact that applicant provides no evidence to prove contrary. As argued above in claim 1, a separator with randomly oriented fibers (fiber entanglement) and uniform density would have a fiber distribution that is uniform and a

Art Unit: 1795

fiber orientation that is random in the longitudinal and the cross directions of the separator.

Applicant argues that:

*“a paper sheet formed by wet process in present claim 1 defines not only a process but a product.”*

However, as explained above in the claims analysis, a process limitation in a product claim is given little weight. The cited prior art teaches all of the positively recited structure of the claimed apparatus or product. The determination of patentability is based upon the apparatus structure itself. The patentability of a product or apparatus does not depend on its method of production or formation. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. See *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (see MPEP § 2113). Therefore the process of a paper sheet “formed by wet process” is given no patentable weight since the prior art meets the final product that is claimed. As applicant provides no evidence as to how the wet process is a product as well as a process, this limitation is given no patentable weight.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ASHLEY KWON whose telephone number is (571)270-7865. The examiner can normally be reached on Monday to Thursday 7:30 - 6 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

Art Unit: 1795

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ASHLEY KWON/  
Examiner, Art Unit 1795

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795